REMARKS

The application has been reviewed and the specification has been amended as requested by the Examiner. In addition, drawing corrections are being submitted for figures 4d, 4e, 5b as well as a new figure 4f to overcome the Examiner's objections and to correct some errors. More particularly The Applicants have discovered that Fig. 4f should have been labeled 4e, and a figure identified as the circuit diagram for a USD has been inadvertently omitted, and is submitted herein. The specification clearly describes the schematic diagrams for three types of devices: a breakover USD (Figs. 4b-e, page 10, last paragraph to page 13 second paragraph, inclusive); a breakunder USD (Figs. 4 h-g, page 13 last paragraph-page 14, first paragraph, inclusive) and a breakunder USD with hysteresis (Fig. 5a-b, page 14, second paragraph-page 16). Moreover, from these descriptions it is clear that omitted Fig. 4f is similar to Fig. 4e with some additions that are clearly described (note in particular the top of page 14 which indicates that in Fig. 4f capacitor C1 and transistor T2 have been added). Furthermore, it is clear from these descriptions that Fig. 5b has been derived by adding additional components to the diagram of Fig. 4f. More specifically, as described on page 15, TRIAC2 and DIAC2 have been added. From these detailed descriptions, it is easy to derive Fig. 4f and accordingly, the figure submitted herewith does not constitute new matter.

Regarding support for the claims, the applicants hereby direct the Examiner to the title of the invention, and the specificication as whole which clearly indicates that the subject module is to be integrated in a standard monitoring system. For example, on page 26, fourth full paragraph, the specification describes how the

ADM 32 is attached mechanically and electrically to the monitor 12 to form a single, integrated, composite system 10, and that the coupling is accomplished mechanically by brackets, and electrically by connectors. The Examiner is further directed to pages 28-30 where the exchange of data between the ADM 32 and monitor 12 is described. In addition, the Examiner is also directed to the bottom of page 30 which states that the overall combination of a monitor and an ADM requires less space. Clearly, in the present case, the module is packaged with the monitor to form an integral package.

Moreover, it is clear from the description (see, e.g., page 7) that the patient monitor is a generic monitor that can obviously operate on its own, and does not need to be connected to the defibrillator.

The Applicants would like to thank the Examiner for the courtesy extended during the interview of December 6, 2002. As explained at the interview, the present invention pertains to a defibrillator assembly that can be incorporated into a standard patient monitor. The advantage of this arrangement is that it reduces costs to hospitals, reduce clutter around the patient, since there is no longer a need for a separate defibrillator, and increases the chances of the patient surviving a heart attack since in the later case a nurse or a doctor will not have obtain a separate, free standing defibrillator.

The Examiner has rejected the claims as being anticipated by , or obvious in view of several references. The Applicants respectfully traverse these rejections. The present invention discloses and claims a defibrillator module that cannot operate on its own but is designed and constructed to be coupled to a patient

monitor. Importantly, the patient monitor is functionally a separate module adapted to be sold as an add-on unit for a patient monitor. In other words, a clinician or a hospital can buy a patient monitor and opt either at the same time, or a later time, to add a defibrillator module to the patient monitor. As explained in the previous submission, the Lin reference pertains to a stand alone defibrillator that cannot be readily incorporated into a patient monitor. Sjoquist discloses a standalone defibrillator as well which also cannot be readily be incorporated into a patient monitor (the word "cannot" was unintentionally omitted in the former submission).

The Rockwell reference discloses an external defibrillator that has an IR input/output port for communicating with an external control device, such as a laptop, PDA, etc. However, Rockwell does not disclose a patient monitor adapted to sense and display a patient's physiological characteristics. Nor is the external control device capable of determining a patient characteristic independently of the defibrillator module since it does not have any sensors for this purpose.

Parker discloses a defibrillator that also communicates with an external computer device such as a laptop, etc. Just like Rockwell, Parker fails to disclose a patient monitor.

Commonly owned patent Lin discloses a self-sufficient external defibrillator. It is not readily integrated into a patient monitor and cannot be used for this purpose without some major modifications.

Accordingly it is respectfully submitted that the subject application is patentably distinguishable over the prior art and should be allowed.

The Commissioner is authorized to use Deposit Account No. 07-1730 for any fees that may be required including fees for extensions. This is a continuing request.

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Respectfully submitted,

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SPECIFICATION WITH CHANGES INDICATED

On page 8, amend the first full paragraph as follows:

As seen in Fig. 1, associated with monitor 12 there is provided an automatic defibrillator module (ADM) 32. The ADM is connected to its own set of sensors or defibrillator pads 34 via a cable 36. The purpose of providing the ADM 32 as a module rather than a stand-alone unit is so that it can share some of the functions and components of the monitor 12. For this purpose, the ADM 32 is connected to monitor 12 via a data cable 38 which acts as an output member and interfaces the ADM 32 with the monitor 12 as described in more detail below. Power to the ADM 32 can be provided by the power supply via a cable 40, or alternatively, the cable 40 may be connected to a standard line voltage outlet (not shown).

On page 11, amend the second full paragraph:

Fig. 4e is a high voltage, high current, implementation of a "breakover" USD, equivalent to a Shockley diode, using a DIAC and a TRIAC. Note that the overall circuit of Fig. [3] 4e has only two terminals, an anode A' and a cathode K'. The TRIAC will change to a state of low impedance allowing a high current to flow when an appropriate voltage is applied to its gate terminal g. The combination of resistors R1 and R2 form a voltage divider, dividing the voltage V down to a voltage Vb, referenced to the cathode K', at the base of the transistor T1, where Vb=V[R2/(R1+R2)]. The emitter follower configuration of transistor T1 keeps the voltage applied to the DIAC at point X at approximately 0.7 Volts below the voltage Vb.

Page 14 amend the last paragraph as follows:

Fig. 5a shows the circuit symbol for a breakunder USD with hysteresis. Fig. 5b shows an implementation of the device based upon the breakunder device shown in Fig.4f-h. Only the differences will be described. A transistor T2 now forms a second emitter follower supplying a second DIAC, DIAC2. The voltage at point Y is designed to have a value equal to the threshold of DIAC2 when the voltage V across A', K' is equal to an upper threshold Vh. From Fig. 5b it can be seen that, unlike the voltage at point X, the voltage at point Y will instantaneously follow V and will be a proportion of V according to the ratio set by R4 and R5. If the voltage V causes the voltage at Y to exceed the voltage threshold of DIAC2, then a second TRIAC, TRIAC2, will enter a low impedance state. As soon as TRIAC2 enters its low impedance state, the voltage Vb at the base of T1 will reduce to almost zero. Once TRIAC2 has entered a low impedance state T1 cannot supply any current to DIAC1 and therefore the gate of TRIAC1. This "feedback" enhancement of Fig. 4 has introduced a level of hysteresis in to the arrangement. The only way now for TRIAC1 to enter its low impedance state is for the voltage across A', K' to be reduced to zero and then a new voltage applied which has a value between the lower threshold set by R1, R2 and DIAC1 and the upper threshold set by R4, R5 and DIAC2. This device has essentially three modes, two high impedance and one low impedance. If the instantaneous voltage applied to the arrangement is below the lower threshold Vl, then the combination of R1, R2 and T1 means that DIAC1 does not pass current and TRIAC1 remains in it's high impedance state. If the applied voltage is greater than the lower threshold Vl and less than the upper

threshold Vh, then the combination of R4, R5 and T2 means that DIAC2 does not pass current and with DIAC1 now passing current, once the voltage across C1 has had sufficient time to rise, to the gate of TRIAC1, TRIAC1 enters its low impedance state. If, however, the applied voltage is greater than the upper threshold Vh, then the combination of R4, R5 and T2 means that DIAC2 does pass current to the gate of TRIAC2 thereby inhibiting DIAC1 and keeping TRIAC1 in its high impedance state.

CLAIMS WITH CORRECTIONS INDICATED

1 (Amended). A composite monitoring system comprising:

a patient monitor including a sensor arranged to sense a physiological characteristic of a patient and a signal processor coupled to said sensor and adapted to process the signal from said sensor and an output member; and

a defibrillator module adapted to be selectively coupled to said patient monitor, said defibrillator module including a pulse generator responsive to commands to generate therapeutic pulses for the patient, and a data generator arranged to generate indication signals indicative of an operation of said defibrillator module;

said patient monitor and said defibrillator module cooperating when coupled to transfer said indication signal to said output member [whereby] wherein said output member generates output signals corresponding to one of said patient characteristic and said indication signals[.];

wherein said patient monitor is operational without said defibrillator module.

Insert the following new claims:

22 (New). The composite system of claim 1 wherein said defibrillator module is adapted to operate in one of an automatic, semiautomatic and manual modes.

23 (New). A composite monitoring system comprising:

a patient monitor disposed in a monitor housing and including a sensor arranged to sense a physiological characteristic of a patient and a signal processor coupled to said sensor and adapted to process the signal from said sensor and an output

member; and

a defibrillator module cooperating with said patient monitor to form a single composite integrated system, said defibrillator module including a pulse generator responsive to commands to generate therapeutic pulses for the patient, and a data generator arranged to generate indication signals indicative of an operation of said defibrillator module;

said patient monitor and said defibrillator module cooperating when coupled to transfer said indication signal to said output member wherein said output member generates output signals corresponding to one of said patient characteristic and said indication signals.

9 (Amended). A defibrillator module <u>adapted to be coupled to a separate patient monitor</u> comprising:

a physiological sensor to sense the intrinsic cardiac activity of a patient and to generate a sensor signal indicative of said intrinsic cardiac activity;

a controller arranged to receive said sensor signal and to generate corresponding commands;

a pulse generator arranged to generate therapeutic pulses for the patient in response to said commands;

an output member associated with said controller and adapted to generate output signals indicative of an operation of the defibrillator, said output signals being selected for transmittal to [an] <u>said</u> external patient monitor for display[.];

<u>wherein said physiological sensor, controller, pulse generator and output</u>

member are coupled electrically and mechanically to external patient monitoring unit to form an integral system.

11 (Amended). The module of claim 10 wherein said output member is adapted to receive a physiological parameter detected by said external patient monitor, and wherein said arrhythmia detector is adapted to receive said physiological [monitor] parameter and to make a determination for delivering therapy to the patient based on said physiological parameter.

18 (Amended). A composite defibrillator [module] assembly comprising:

a patient monitor adapted to sense and display a physiological parameter; and

a defibrillator module arranged to be mechanically and electrically couple with said patient monitor to form an integrated composite system and including:

a controller arranged to receive a sensor signal indicative of the intrinsic cardiac activity of a patient and to generate corresponding commands;

a pulse generator arranged to generate therapeutic pulses for the patient in response to said commands;

an output member associated with said controller and adapted to generate output signals indicative of an operation of the defibrillator, said output signals being selected for transmittal to [an external] said patient monitor for display;

wherein said patient monitor is operational without said defibrillator module.

New claims:

24 (New). The defibrillator assembly of claim 16 wherein said defibrillator is adapted in one of several operational mode, including a pacing mode for applying pacing to the patient.

25 (New). A method of providing patient treatment comprising:

providing a patient monitor adjacent to a patient, said patient monitor being adapted to measure a patient characteristic;

providing a separate defibrillator adapted to selectively provide shock therapy to the patient, said patient monitor and said defibrillator being adapted to operate independently of each other; and

coupling said defibrillator and said patient monitor electrically and mechanically to allow said defibrillator and said patient monitor to receive data to or from each other and to form a single integrated system.

26 (New). A method of combining a patient monitoring network and an external defibrillator comprising:

providing a patient monitoring network;

providing an external defibrillator, wherein said patient monitoring network is operational independently of said external defibrillator; and

coupling said patient monitoring network and said external defibrillator to couple to each other for exchanging information.